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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,961	03/19/2002	Yong-Tak Lee	112328	5498

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER
MONBLEAU, DAVIENNE N

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application No. 10/099,961	Applicant(s) LEE ET AL.	
	Examiner Davienne Monbleau	Art Unit 2828	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

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TECHNOLOGY CENTER 2800

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

The IDS filed on 3/19/02 has been acknowledged and a signed copy of the PTO-1449 is attached herein.

Claim Objections

Regarding Claims 1, 6, 10 and 12, Examiner suggests rewording the paragraphs discussing the first and second QCSE photodetectors to more clearly describe the claimed invention.

Further regarding Claim 1 line 7, "first QCSE" should be changed to – second QCSE – .

Regarding Claim 2 line 4, "exciton" should be changed to – excitation – .

Further regarding Claim 6, in lines 11-12 the phrase "greater being greater" is grammatically incorrect.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the DBR laser must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 6-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 3, it is unclear how if there is only one photodetector how there is still first and second bias voltages applied to a first and second photodetector.

Regarding Claims 6, 10 and 12, the phrase "bias voltage from an outside" is vague and incomplete.

Further regarding Claim 12, it is unclear as to the significance of the "rear terminal of the LD".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-14, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art Figure 2 in view of Yeo et al. ("Integration of Waveguide..."). Regarding Claim 1, Prior Art Figure 2 teaches a wavelength stabilizing method comprising a light source (11), a first photodetector (42) and a second photodetector (43), wherein the outputs are compared in a comparator (52) to a reference voltage (V_{ref}) and the wavelength is shifted accordingly (via temperature control device 80) to stabilize the wavelength. Prior Art Figure 2 does not teach QCSE photodetectors. Yeo et al. teach in Figure 1 two QCSE photodetectors and teach on page 3 column 2 a tunable DFB laser diode emitting light to said QCSE photodetectors. Yeo et al. further teach in Figure 3 overlapping the photocurrent vs. wavelength plots from the respective QCSE photodetectors when a bias voltage is applied. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use QCSE photodetectors in Prior Art Figure 2, as taught by Yeo et al., to demultiplex separated wavelengths and stabilize the laser source at a particular wavelength. This also has great fiber-optic communication systems potential. (See page 1 column 1).

Regarding Claim 5, Prior Art Figure 2 teaches a power stabilizing method comprising a light source (11), a first photodetector (42) and a second photodetector (43), wherein the outputs are compared in a comparator (52) to a reference voltage (V_{ref}) and the current to the laser is adjusted accordingly (61) to stabilize the power. Prior Art Figure 2 does not teach QCSE photodetectors. Yeo et al. teach in Figure 1 two QCSE photodetectors and teach on page 3 column 2 a tunable DFB laser diode emitting light to said QCSE photodetectors. Yeo et al. further teach in Figure 3 overlapping the photocurrent vs. wavelength plots from the respective QCSE photodetectors when a bias voltage is applied. Therefore, it would have been obvious to

one of ordinary skill in the art at the time of the invention to use QCSE photodetectors in Prior Art Figure 2, as taught by Yeo et al., to demultiplex separated wavelengths and stabilize the laser source at a particular power level. This also has great fiber-optic communication systems potential. (See page 1 column 1).

Regarding Claim 6, Prior Art Figure 2 teaches a wavelength/power stabilizing system comprising a laser diode (11), a first photodetector (42) and a second photodetector (43), wherein the outputs are compared in a comparator (52) to a reference voltage (V_{ref}), a wavelength stabilizing temperature control part (80) to control the temperature of the laser diode, and a power stabilizing driving control part (61) to control the driving current to the laser diode. Prior Art Figure 2 further teaches adder (53) along with said comparator (52) for said wavelength control, but not for power control. However, applying the same process to control the power is repetition of parts and involves routine skill in the art. Also, Prior Art Figure 2 does not teach QCSE photodetectors. Yeo et al. teach in Figure 1 two QCSE photodetectors and teach on page 3 column 2 a tunable DFB laser diode emitting light to said QCSE photodetectors. Yeo et al. further teach in Figure 3 overlapping the photocurrent vs. wavelength plots from the respective QCSE photodetectors when a bias voltage is applied. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use QCSE photodetectors in Prior Art Figure 2, as taught by Yeo et al., to demultiplex separated wavelengths and stabilize the laser source at a particular power level. This also has great fiber-optic communication systems potential. (See page 1 column 1).

Regarding Claim 10, Prior Art Figure 2 teaches a wavelength/power stabilizing system comprising a DBR laser diode (11), a first photodetector (42) and a second photodetector (43),

wherein the outputs are compared in a comparator (52) to a reference voltage (V_{ref}), a wavelength stabilizing temperature control part (80) to control the temperature of the laser diode, and a power stabilizing driving control part (61) to control the driving current to the laser diode. It is known in the art that for a DBR laser source the tuning current goes to the tuning section of the laser and the driving tuning goes to the gain section of the laser. Prior Art Figure 2 further teaches adder (53) along with said comparator (52) for said wavelength control, but not for power control. However, applying the same process to control the power is repetition of parts and involves routine skill in the art. Also, Prior Art Figure 2 does not teach QCSE photodetectors. Yeo et al. teach in Figure 1 two QCSE photodetectors and teach on page 3 column 2 a tunable DFB laser diode emitting light to said QCSE photodetectors. Yeo et al. further teach in Figure 3 overlapping the photocurrent vs. wavelength plots from the respective QCSE photodetectors when a bias voltage is applied. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use QCSE photodetectors in Prior Art Figure 2, as taught by Yeo et al., to demultiplex separated wavelengths and stabilize the laser source at a particular power level. This also has great fiber-optic communication systems potential. (See page 1 column 1).

Regarding Claim 12, Prior Art Figure 2 teaches a wavelength/power stabilizing system comprising a laser diode (11), a beam splitter (22), a first photodetector (42) and a second photodetector (43), wherein the outputs are compared in a comparator (52), a temperature control circuit (80) to control the temperature of the laser diode, and a laser diode driver (61) to control the driving current to the laser diode. TECs are known in the art to stabilize the laser diode temperature. Prior Art Figure 2 does not teach QCSE photodetectors. Yeo et al. teach in Figure

1 two QCSE photodetectors and teach on page 3 column 2 a tunable DFB laser diode emitting light to said QCSE photodetectors. Yeo et al. further teach in Figure 3 overlapping the photocurrent vs. wavelength plots from the respective QCSE photodetectors when a bias voltage is applied. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use QCSE photodetectors in Prior Art Figure 2, as taught by Yeo et al., to demultiplex separated wavelengths and stabilize the laser source at a particular power level. This also has great fiber-optic communication systems potential. (See page 1 column 1).

Regarding Claim 2, determining the excitation peak involves routine skill in the art.

Regarding Claim 3, Yeo et al., teach on page 4 column 1 applying bias voltages to each photodetector.

Regarding Claims 4, 7, and 13, Yeo et al. teach on page 3 column 2 a DFB laser diode.

Regarding Claim 8, determining whether to increase or decrease the temperature based upon the outputted date of the photocurrent vs. wavelength plots depends on the location of the reference wavelength/voltage and involves routine skill in the art. If the wavelength is too low, up the temperature, and visa-versa.

Regarding Claims 9, 11 and 14, Yeo et al. teach in Figure 3 that the QCSE photodetectors have different absorption characteristics and in Figure 1 that they are integratedly formed by quantum well mixing.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Venditti et al. ("Temperature Dependence..."); US 6,371,622; US 5,691,989; US 6,198,757; US 6,233,263; US 6,289,028; and US 5,936,985.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Davienne Monbleau

DNM
June 23, 2003

Paul Ip

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